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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,513	04/11/2002	George Caudle	018158-012610US	1672

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EXAMINER

LEE, JOHN D

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/053,513

Applicant(s)

CAUDLE, GEORGE

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 56.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e) based on provisional application Serial Number 60/252,634, filed on November 22, 2000.

The disclosure is objected to because of the following informality: An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78(a)(2) and (a)(5)). Therefore, such a specific reference to provisional application Serial Number 60/252,634 must be inserted as the first sentence on page 1 of the specification. Appropriate correction is required. Applicant's cooperation is requested in correcting any other errors of which applicant may become aware in the specification.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,093,832 to Bethune et al in view of U.S. Patent 5,416,867 to Thorsten et al (both submitted by applicant). Bethune et al discloses a laser system (and corresponding method) for frequency converting a fundamental laser beam comprising: a laser generating a laser beam with a first frequency, a nonlinear optical crystal disposed in an optical path of the beam for effecting a conversion of the first frequency to a second frequency, wherein the conversion varies with an angle of the crystal to the optical path, and means for controlling the temperature of the nonlinear

Art Unit: 2874

optical crystal, thus controlling the angle of exit of the converted frequency from the crystal. It is thus seen that Bethune et al discloses the same frequency conversion system as is being claimed except the reference does not explicitly state that temperature controlling members having appropriate coefficients of thermal expansion are used to control the temperature of the nonlinear optical crystal. Thorsten et al, however, clearly teaches that an optical element in a multi-element optical system can have its angle (with respect to the optical path) temperature-controlled by the same type of differential thermal expansion members as is set forth in applicant's claims. Since the teaching of Thorsten et al is clearly applicable to any transmissive optical element wherein angular orientation is critical, the person of ordinary skill in the art would have found it obvious to utilize those teachings in the frequency conversion system of Bethune et al. The result would be the same system (and method) being claimed. Figure 4 of Bethune et al shows how temperature and crystal angle are related. Note that the temperature control means in Bethune et al is a "feedback" arrangement, meaning that crystal angular variation and temperature variation can compensate, one for the other. The compensation can also be effected so as to maintain the converted frequency within a desired range during temperature variations.

Claims 6-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,093,832 to Bethune et al in view of U.S. Patent 5,416,867 to Thorsten et al (both submitted by applicant), further in view of U.S. Patent 5,742,626 to Mead et al (cited by the Examiner on the attached form PTO-892). No specific end uses of the frequency converting laser system of Bethune et al are given, although it is applicable to

Art Unit: 2874

all laser systems which utilize nonlinear crystals (see column 1, lines 7-9). One well-known and widely used laser system which utilizes nonlinear crystals for frequency conversion is a laser corneal surgery system such as that shown by Mead et al. The laser frequency which is used for refractive surgery (approximately 180 nm to 213 nm) is produced by frequency conversion in the Mead et al system. Since the Bethune et al system is applicable thereto, and since temperature stability is of utmost importance in a laser corneal surgery system, it would certainly have been obvious (for the person of ordinary skill in the art) to use the Bethune et al/Thorsten et al arrangement in the Mead et al surgical laser system.


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other teachings of temperature and/or angular tuning of nonlinear optical crystals can be found in the cited U.S. Patents to Deacon ('156), Clark et al ('140), Ohtsuki et al ('598), Black et al ('900), Yin et al ('596), and Yin et al ('134). The cited U.S. Patent to Munnerlyn et al was discussed on the first page of the specification of the instant application.

All of the prior art documents submitted by applicant in the Information Disclosure Statements filed on April 15, 2002, and May 20, 2002, have been considered and made of record (note the attached initialed copy of forms PTO-1449).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to

Art Unit: 2874

the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**